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WISCONSIN GEOLOGICAL AND

NATURAL HISTORY SURVEY.

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Hydrographic Map

OF THE

Oconomowoc - Waukesha

LAKE DISTRICT.

Waukesha County, Wis.

Hydrography in Charge of L. S. Smith. Field Work by H. M. TRIPPE and L. S. SMITH, 1898.

MADISON, WISCONSIN 1899

Explanation of Map.

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This map shows by means of contour lines and by tinting, the depth of water in the principal lakes of the Oconomowoc-Waukesha lake district. Most of the soundings on which the map is based were made during the winter of 1897-8 through the ice. In each lake a line of soundings was run through the axis of the lake and cross lines were run to the shore at frequent intervals. Many hundreds of soundings were taken in the preparation of the map. The position of each sounding was determined by chain and transit. By means of the lines thus run numerous points were accurately established on the shores of the lakes, so that it was possible by means of this survey to correct many of the very considerable errors found in the outlines of these lakes as given in the county atlas. When the soundings were platted in the preparation of the map, it was found that in many cases the outline of widely from that given in the atlas. In such cases the outlines were the lakes, as determined by the observations of this Survey, departed further corrected by a special survey made during the summer, and at the same time numerous additional soundings were made to determine more accurately the position of bars, etc., whose limits could not be easily determined through the ice.

This map does not attempt to give all the minute details of the hydrography of these lakes. It is quite possible, and indeed probable, that small bars have escaped observation, and also that there are points in the lakes somewhat deeper than is shown by the observations. The Survey will be glad to receive a y corrections in matters of this kind. If these are to be useful they must depend on exact observation and the points where they are made must be so located that the observations can be verified.

The contour lines on the map show intervals of ten feet in depth. The outline of each lake indicates the level of the lake during the winter of 1898. The line marked "10" is drawn through the points where the water is ten feet deep and shows what the outline would be if the water were lowered ten feet. The next line to this marks the depth of 20 feet, and so on of the succeeding lines. The space between any line and that next inside of it indicates the distance required for the depth of the water to increase 10 feet. The lines serve, therefore, to indicate the slope of the bottom as well as the depth of the water. Where the lines are close together, the slope is steep; where they are far apart, the slope of the bottom is correspondingly gradual. In the



deeper parts of the lake a number of the deepest soundings are given in feet. In all such cases the decimal point in the number indicates the exact place where the sounding was made.

In nearly all of the lakes it will be seen that the slope of the bottom is very gradual until a depth of about 10 feet is reached and that from this depth the bank slopes rapidly down to a bottom which is nearly flat. In Pine lake, for instance, the contours are greatly crowded between 10 feet and 80 feet while a large area of the bottom is between 80 and 90 feet. In Oconomowoc lake the same statement is true of the contours between 10 and 50 feet, while a large area of the lake is nearly flat, the maximum depth being only 62.6 feet.

In order to make the shape of these lake basins more obvious the depth of the water has been shown by a blue color printed in four shades. The shoal margin of the lake down to a depth of 10 feet has received the lightest tint; the slope from 10 to 40 feet, the second tint; from 40 to 70 feet, the third tint; and the bottom of the deeper lakes below 70 feet is given the darkest tint.

For each of the important lakes the elevation above lake Michigan is given. The elevation of the railroad track above lake Michigan was furnished to the Survey by the Chicago, Milwaukee and St. Paul Railway, and the height of the water for the various lakes in September, 1898, was compared with these elevations by means of spirit leveling. The areas of the lakes were determined from large scale maps. The elevations, areas, and outlines are far more accurate than any which have previously been published. The roads, etc., have been taken from the county atlas. It was impossible for the Survey to visit all of the smaller lakes within this area, and these have been indicated by a blue stippling. Most of them are shallow ponds.

Dams are found at the outlet of some of the lakes, whose height is given herewith. In some cases the stream has been dredged out below the dam so that the depth of the water in the lake has not been increased to an amount at all equal to the height of the dam. In other cases the dam has been placed some little way below the natural outlet of the lake, and thus the fall of the stream between the outlet and the dam would be included in the height of the latter. The dam at the outlet of Fowler lake has a height of 6.8 feet; Nagawicka, 6.9 feet; Okauchee, 10.7 feet; Pewaukee, 7.0 feet. A very great effect has been produced by the dam on the size of Pewaukee lake, as is indicated by the map. In the other lakes the increase of area has been very much less.